L2 – MORE Derivatives of Sine and Cosine MCV4U

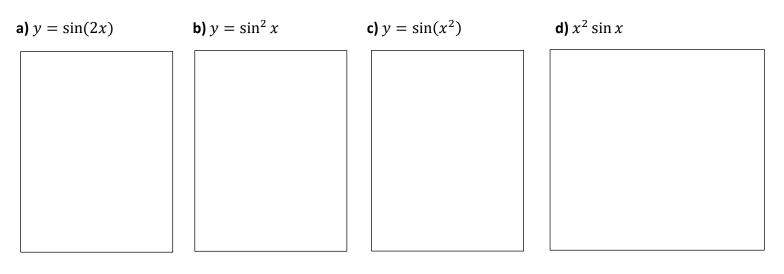
Unit 3

Jensen

Reminder of rules:

Rule	Derivative
Power Rule	$f'(x) = nx^{n-1}$
If $f(x) = x^n$	
Constant Multiple Rule	$f'(x) = c \cdot g'(x)$
If $f(x) = c \cdot g(x)$ where c is a	
constant	
Sum Rule	h'(x) = f'(x) + g'(x)
If $h(x) = f(x) + g(x)$	
Difference Rule	h'(x) = f'(x) - g'(x)
If $h(x) = f(x) - g(x)$	
Product Rule	h'(x) = f'(x)g(x) + f(x)g'(x)
If $h(x) = f(x)g(x)$	
Quotient Rule	f'(x)g(x) - g'(x)f(x)
	$h'(x) = \frac{f'(x)g(x) - g'(x)f(x)}{[g(x)]^2}$
If $h(x) = f(x) \div g(x)$	10 () 1
Power of a Function Rule	$h'(x) = n[f(x)]^{n-1} \times f'(x)$
If $h(x) = (f(x))^n$	
Chain Rule	$h'(x) = f'[g(x)] \times g'(x)$
If $h(x) = f(g(x))$	

Example 1: Determine the derivative with respect to \boldsymbol{x}



Example 2: Find the derivative with respect to x for each function.			
$\mathbf{a)} \ y = \cos(3x)$	$\mathbf{b)}f(x)=2\sin(\pi x)$	$c) g(x) = \tan(x^2 + 3x)$	
Example 3: Differentiate with respect to x .			
$\mathbf{a)} \ y = \cos^3 x$	$\mathbf{b)} f(x) = 2\sin^3 x - \frac{1}{2}$	- 4 cos² x	
Example 4: Find each derivative with respect to t .			
$\mathbf{a)} \ y = t^3 \cos t$	$\mathbf{b)} h(t) = \sin(4t) \cot(4t)$	$\cos^2 t$	

Example 5: Find the derivative of $y = x \tan(2x - 1)$